What is claimed is:

1. A reduced size TM cylindrical shaped microstrip antenna array comprising:

(a) a first dielectric layer;

(b) a plurality of rectangular shaped antenna elements mounted on an upper surface of said first dielectric layer, said antenna elements being aligned with one another and fabricated from copper, said antenna elements being adapted to transmit RF carrier signals containing telmetry data;

(c) a first copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said antenna elements wherein a gap forms between first, second and third edges of the periphery of each of said antenna elements and said copper cross hatch pattern;

(d) an antenna feed network mounted on a bottom surface of said first dielectric layer for connecting each of said antenna elements to an antenna feed network input terminal, said antenna feed network including a plurality of transmission lines configured to provide for an equal transmission line length from said antenna feed network input terminal to each of said antenna elements such that the RF carrier signals transmitted by each of said antenna

elements are in phase and have equal amplitudes;

(e) a second copper cross hatch pattern mounted on the bottom surface of said first dielectric substrate in proximity to said antenna feed network;

(f) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer;

(g) a third copper cross hatch pattern mounted on an upper surface of said second dielectric layer, said third copper cross hatch pattern being in alignment and substantially identical to said second cross hatch pattern; and

(h) a solid copper ground plane affixed to a bottom surface of said second dielectric layer.

2. The TM cylindrical shaped microstrip antenna array of claim 1 wherein said antenna feed network includes a main transmission line connected to said antenna feed network input terminal and a plurality of branch transmission lines, each of said branch transmission lines having one end thereof connected to one of said antenna elements and an opposite end thereof connected to said main transmission line.

3. The TM cylindrical shaped microstrip antenna array of claim 1 operates at a TM frequency band of 2210 MHz +/- 2.5

MHz.

4. The TM cylindrical shaped microstrip antenna array of claim 1 wherein said TM cylindrical shaped microstrip antenna array fits on a projectile having a diameter of five inches, said TM cylindrical shaped microstrip array having a width of 1.5 inches, and a depth of 0.5 inches.

5. The TM cylindrical shaped microstrip antenna array of claim 1 further comprising a bonding film positioned between said first dielectric layer and said second dielectric layer, said bonding film securing the bottom surface of said first dielectric layer to the upper surface of said second dielectric layer.

6. The TM cylindrical shaped microstrip antenna array of claim 1 further comprising:

(a) a third dielectric layer positioned above said first dielectric layer in alignment with said first dielectric layer; and

(b) a bonding film positioned between said first dielectric layer and said third dielectric layer, said bonding film securing the upper surface of said first dielectric layer to a bottom surface of said third

dielectric layer.

7. The TM cylindrical shaped microstrip antenna array of claim 6 wherein said third dielectric layer is a cover for said TM cylindrical shaped microstrip antenna array.

8. The TM cylindrical shaped microstrip antenna array of claim 1 wherein said plurality of rectangular shaped antenna elements comprises six copper antenna elements mounted on an upper surface of said first dielectric layer.

9. The TM cylindrical shaped microstrip antenna array of claim 1 wherein said each of said plurality of antenna elements has an elongated slot located in proximity to the lower edge of said antenna element, said elongated slot in each of said plurality of antenna elements reducing the size of said antenna element, said elongated slot in each of said plurality of antenna elements having an approximate length of 0.25 of an inch.

10. The TM cylindrical shaped microstrip antenna array of claim 1 wherein each of said plurality of antenna elements has a step-shaped tuning tab which comprises the upper edge of each of said antenna elements, said step shaped tuning tab for each

of said antenna elements allowing a user to fine tune said TM cylindrical shaped microstrip antenna to an operating frequency of 2210 MHz +/- 2.5 MHz.

11. The TM cylindrical shaped microstrip antenna array of claim 1 further comprising a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming coupled to said antenna elements.

12. The TM cylindrical shaped microstrip antenna array of claim 11 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprise 270 copper plated through holes.

13. The TM cylindrical shaped microstrip antenna array of claim 1 wherein each of said first, second and third copper cross hatch patterns comprises a plurality of 0.02 inch wide copper traces spaced apart by a 0.05 inch rectangular shaped opening.

14. A reduced size TM cylindrical shaped microstrip antenna array comprising:

(a) a first dielectric layer;

(b) six rectangular shaped antenna elements mounted on an upper surface of said first dielectric layer, said six antenna elements being aligned with one another and fabricated from copper, said six antenna elements being adapted to transmit RF carrier signals containing telmetry data;

(c) a first copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said six antenna elements wherein a gap forms between first, second and third edges of the periphery of each of said six antenna elements and said copper cross hatch pattern;

(d) an antenna feed network mounted on a bottom surface of said first dielectric layer for connecting each of said six antenna elements to an antenna feed network input

terminal, said antenna feed network including a plurality of transmission lines configured to provide for an equal transmission line length from said antenna feed network input terminal to each of said six antenna elements such that the RF carrier signals transmitted by each of six said antenna elements are in phase and have equal amplitudes;

(e) a second copper cross hatch pattern mounted on the bottom surface of said first dielectric substrate in proximity to said antenna feed network;

(f) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer;

(g) a third copper cross hatch pattern mounted on an upper surface of said second dielectric layer, said third copper cross hatch pattern being in alignment and substantially identical to said second cross hatch pattern;

(h) a solid copper ground plane affixed to a bottom surface of said second dielectric layer; and

(i) a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated

through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming coupled to said antenna elements.

15. The TM cylindrical shaped microstrip antenna array of claim 14 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprise 270 copper plated through holes.

16. The TM cylindrical shaped microstrip antenna array of claim 14 further comprising a bonding film positioned between said first dielectric layer and said second dielectric layer, said bonding film securing the bottom surface of said first dielectric layer to the upper surface of said second dielectric layer.

17. The TM cylindrical shaped microstrip antenna array of

claim 14 further comprising:

(a) a third dielectric layer positioned above said first dielectric layer in alignment with said first dielectric layer; and

(b) a bonding film positioned between said first dielectric layer and said third dielectric layer, said bonding film securing the upper surface of said first dielectric layer to a bottom surface of said third dielectric layer.

18. The TM cylindrical shaped microstrip antenna array of claim 14 wherein said each of said six antenna elements has an elongated slot located in proximity to the lower edge of said antenna element, said elongated slot in each of said six antenna elements reducing the size of said antenna element, said elongated slot in each of said six antenna elements having an approximate length of 0.25 of an inch.

19. The TM cylindrical shaped microstrip antenna array of claim 14 wherein each of said six antenna elements has a step-shaped tuning tab which comprises the upper edge of each of said antenna elements, said step shaped tuning tab for each of said six antenna elements allowing a user to fine tune said TM cylindrical shaped microstrip antenna to an operating

frequency of 2210 MHz +/- 2.5 MHz.

20. A reduced size TM cylindrical shaped microstrip antenna array comprising:

(a) a first dielectric layer;

(b) a plurality of rectangular shaped antenna elements mounted on an upper surface of said first dielectric layer, said antenna elements being aligned with one another and fabricated from copper, said antenna elements being adapted to transmit RF carrier signals containing telmetry data, wherein said each of said plurality of antenna elements has an elongated slot located in proximity to the lower edge of said antenna element, said elongated slot in each of said plurality of antenna elements reducing the size of said antenna element, said elongated slot in each of said plurality of antenna elements having an approximate length of 0.25 of an inch;

(c) a first copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said antenna elements wherein a gap forms between first, second and third edges of the periphery of each of said antenna elements and said copper cross hatch pattern;

(d) an antenna feed network mounted on a bottom surface of

said first dielectric layer for connecting each of said antenna elements to an antenna feed network input terminal, said antenna feed network including a plurality of transmission lines configured to provide for an equal transmission line length from said antenna feed network input terminal to each of said antenna elements such that the RF carrier signals transmitted by each of said antenna elements are in phase and have equal amplitudes;

(e) a second copper cross hatch pattern mounted on the bottom surface of said first dielectric substrate in proximity to said antenna feed network;

(f) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer;

(g) a third copper cross hatch pattern mounted on an upper surface of said second dielectric layer, said third copper cross hatch pattern being in alignment and substantially identical to said second cross hatch pattern, wherein each of said first, second and third copper cross hatch patterns comprises a plurality of 0.02 inch wide copper traces spaced apart by a 0.05 inch rectangular shaped opening; and

(h) a solid copper ground plane affixed to a bottom surface of said second dielectric layer;

(i) a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprising 270 copper plated through holes, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming coupled to said antenna elements;

(j) a first bonding film positioned between said first dielectric layer and said second dielectric layer, said first bonding film securing the bottom surface of said first dielectric layer to the upper surface of said second dielectric layer;

(k) a third dielectric layer positioned above said first dielectric layer in alignment with said first dielectric layer; and

(l) a second bonding film positioned between said first dielectric layer and said third dielectric layer, said second bonding film securing the upper surface of said first dielectric layer to a bottom surface of said third dielectric layer.

21. The TM cylindrical shaped microstrip antenna array of claim 20 wherein each of said plurality of antenna elements has a step-shaped tuning tab which comprises the upper edge of each of said antenna elements, said step shaped tuning tab for each of said antenna elements allowing a user to fine tune said TM cylindrical shaped microstrip antenna to an operating frequency of 2210 MHz +/- 2.5 MHz.